

REMARKS

By the above actions, claim 1 has been amended. In view of the amendment made to claim 1 and the following remarks, reconsideration of this application is requested.

Claims 1 & 2 have been rejected under 35 USC § 103 based on the combined teachings of the Moore '638 and Ono patents. This rejection is inappropriate, at least as to the extent that this rejection may apply to the claims as now presented.

First, in view of the Examiner's comment in lines 5-8, page 3, of his Office Action, claim 1 has been amended so as to positively recite the "conveying" of the plate-like article together with said frame with the increased spacings between said chips being maintained. Thus, to the extent that the Examiner treated this clause as only requiring a capability, not actual performance, of conveyance, such a position can no longer be maintained by the Examiner.

As for the combination of references, the proposed combination is neither obvious, nor capable of leading one of ordinary skill to the present invention. In particular, the method of the present invention relates to the expanding into chips of a plate-like article that is stuck to an adhesive sheet which is mounted to a ring-shaped frame and the subsequent conveyance of the article in the ring-shaped frame while maintained in expanded form. While Moore discloses a method by which an article is stuck to a sheet which is expanded into chips and the subsequent conveyance with the expanded form being maintained, all similarity to the present invention ends with these shared attributes.

Instead of a frame, the a plastic film on which a wafer has been "scribed" and then "cracked" along the scribe marks into individual dies is manually placed in an expanding device in which a heated plastic button 18 is pressed against the plastic film to expand the spacing between the individual dies by permanently stretching the plastic film. After a period of cooling, the "button 18 and plastic 2 carrying the separated dies are removed as a unit." No ring-shaped frame is used or needed. The lack of the use of such a ring-shaped frame is not commented upon or otherwise addressed by the Examiner, nor is any reason given as to why such a frame would be used as transportation means.

As for the Ono patent which the Examiner has cited as teaching "conveying said plate-like article together with said chuck stage" to different areas of a dicing device, apart

from this general characterization, the Ono patent has absolutely no relevance to the present invention or even the teachings of the Moore patent. First, like the Moore patent, transporting of the wafer is *not* performed using a “ring-shaped frame,” and instead, the wafers are supported on wafer supporting discs 50A, 50B which are supported on X-Y axis movable horizontal plates 16A, 16B and 34A, 34B. Such a mode of transportation is used because Ono’s device does not have anything to do with expansion of a diced wafer, but rather is solely directed to alignment of wafers in one of two alignment stations and transporting of the aligned wafers to the dicing station. The only applicability of Ono to Moore, would be as a substitute for his scribing operation since it contains no disclosure as to how the cut wafers are subsequently handled, on the one hand, and since its X-Y alignment supports are unsuitable to use in an expansion phase or subsequent transport of the expanded wafer, on the other hand, not to mention that Moore already provides a means for transporting of his expanded plastic film and chips upon the button 18.

Accordingly, since neither of these references teaches either of a ring-shaped frame, let alone how expansion and subsequent conveyance in expanded form can be performed using a ring-shaped frame, it is simply impossible for these references to lead one of ordinary skill to the claimed invention. As such, withdrawal of the § 103 rejection based upon Moore and Ono patents should be withdrawn and such action is hereby requested.

Claims 3 & 4 have been rejected under 35 USC § 103 based on the combined teachings of the Moore ‘638 and Ono patents when viewed in further combination with the Cullen et al. patent. However, this rejection suffers from the same deficiencies as the rejection of claim 1 from which these claims depend. Moreover, the Cullen et al. patent has no relevance to either the present invention or the methods of the Moore ‘638 and Ono patents being directed to the fabrication of containers for bulk materials that bear no resemblance to the wafers processed by apparatus of the Moore ‘638 and Ono patents, and not having a ring-shaped frame that supports a plate-like article stuck to an adhesive sheet it is simply not understandable why such a patent would even be considered by one of ordinary skill in the semiconductor wafer processing art, let alone how it could teach an expanding step that includes a step of “forming a protrusion in a portion of said adhesive sheet *between said frame and said plate-like article*,” and maintaining the expansion by a step of welding

or bonding a base of the protrusion of said adhesive sheet that is located between the frame and article. As such, this rejection is simply unjustifiable and should be withdrawn, such action now being requested.

Claims 5-8 have been rejected under 35 USC § 103 based on the combined teachings of the Moore '638 and Ono patents when viewed in further combination with the Bailey patent. However, here again, this rejection suffers from the same deficiencies as the rejection of claim 1 from which these claims depend, none of which can be overcome by the disclosure of the Bailey patent which relates to article strapping. Likewise, as is the case for the Cullen et al. disclosure, this patent has no relevance to either the present invention or the methods of the Moore '638 and Ono patents, being directed to strapping of bundles of articles, e.g., knocked-down cartons, that bear no resemblance to the wafers processed by apparatus of the Moore '638 and Ono patents, and not having a ring-shaped frame that supports a plate-like article stuck to an adhesive sheet. It is simply not understandable why such a patent would even be considered by one of ordinary skill in the semiconductor wafer processing art, let alone how it could teach the specifically claimed expanding step of these claims. Therefore, withdrawal of this rejection is also in order and now requested.

Claims 9-11 have been rejected under 35 USC § 103 based on the combined teachings of the Moore '638 and Ono patents when viewed in further combination with the Tsujimoto et al. patent. However, the Tsujimoto et al. patent cannot make up for any of the above mentioned shortcomings of the basic combination of the Moore '638 and Ono patents. That is, even if the heat shrinkable adhesive film were to be utilized instead of a stretchable film, since the Tsujimoto et al. teach removal of the chips in the same station in which the film is heat-shrunk, no conveyance in expanded form is performed and given the weakened adhesion that results, such would evidently be undesirable. Thus, the Tsujimoto et al. patent, at best, teaches away from the present invention and cannot render it unpatentable now matter how it might be viewed in combination with the teachings of the Moore '638 and Ono patents. Accordingly, reconsideration and withdrawal of this rejection is in order and is hereby requested.

Claims 12-17 have been rejected under 35 USC § 103 based on the combined teachings of the Moore '638 and Ono patents when viewed in further combination with the


Moore '051 and Tsujimoto et al. patents. However, not only is this a combination of apples and oranges to get bananas, but the addition of Moore '051 adds nothing to Moore '638. That is, Moore '051 merely discloses alternative to (or more details of) the technique disclosed in Moore '638 by for affixing the wafer-carrying film to a plastic disk. As for Tsujimoto et al. patent, not only do the above comments apply to the applicability of this reference, but is not understood how a technique for heat-shrinking of a film for removal at the heating station is combinable with a technique for stretching and heat-bonding of a stretched film to plastic disk for transport. Moreover, Moore '051 does not even disclose what the Examiner has cited it for since Fig. 8, the portion 201 representing a portion of the stretched film that is to be cut away and not a loose portion that is to be subjected to heating and shrinking to eliminate the loose part as set forth in claim 12. Thus, this rejection is also inappropriate and should be withdrawn as is now requested.

Claims 18-29 have been rejected under 35 USC § 103 based on the combined teachings of the Moore '638 and Ono patents when viewed in further combination with the Broyles and Tsujimoto et al. patents. Apart from the deficiencies of the combination of the Moore '638 and Ono and of the Moore '638 and Ono patents with the Tsujimoto et al. patent noted above, Broyles is simply not combinable with Tsujimoto et al. since Broyles is a stretching technique and Tsujimoto et al. patents is a heat shrinking technique that is incompatible with it since the loose areas 15 (Fig. 5) which result would preclude shrinking of the film to a sufficient extent to result in the separation effect sought in Tsujimoto et al. patent. Furthermore, like Tsujimoto et al., Broyles removes the resulting chips in the same station at which they are expanded, so Tsujimoto et al. and Broyles would both teach away from the present invention's conveyance in expanded form. Therefore, this rejection should also be withdrawn and such action is hereby requested.

Therefore, in the absence of new and more relevant prior art being discovered, this application should now be in condition for allowance and action to that effect is requested. However, while it is believed that this application should now be in condition for allowance, in the event that any issues should remain, or any new issues arise, after consideration of this response which could be addressed through discussions with the undersigned, then the

Examiner is requested to contact the undersigned by telephone for the purpose of resolving any such issue and thereby facilitating prompt approval of this application.

Respectfully submitted,

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